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(54) Title: ON-LINE MONITORING METHOD AND DEVICE FOR A FOSSIL FUEL CONVERTER APPARATUS

(54) 发明名称: 化石燃料换能设备的在线监测方法和装置

(57) Abstract: A method and a device for a fossil fuel converter apparatus, are used for the field of on-line monitoring fuel performance and efficiency in power station. This method carries out the real-time monitoring of the fuel compositions by measuring the operating data of the apparatus, and includes the following steps: determining reactant compositions and their variable numbers; determining fuel compositions and their variable numbers; determining unburnt resultant compositions and their variable numbers; determining the relationship between the fuel compositions and heating values; establishing a set of equations concerning to fuel, reactant and resultant compositions, basing on an energy balance relationship and a material balance relationship of the burning process; providing given conditions concerning to an independent relationship of variables for the set of equations; measuring the boiler operating data, and assigning values to the variables of the set of equations, wherein the sum of the variable numbers assigned by values and the given conditions numbers equals to the sum of reactant compositions, fuel compositions and unburnt resultant compositions variable numbers, so as to achieve the positive definite condition of the set of equations; and solving the set of equations, and obtaining the real-time monitoring data of the apparatus.

(57) 摘要

本发明涉及化石燃料换能设备的在线监测方法和装置, 其中所述方法通过测量换能设备的运行数据和建立的数学模型得到正定解, 而实现化石燃料成分发热量及换能设备的效率和损失的实时监测。主要用于大型电站通过计算机进行在线燃料性质和效率监测及锅炉、机组、机组群优化控制的技术领域。本发明不仅从理论到实际从根本上完整回答和解决了化石燃料换能设备在燃料性质和换能装置效率及损失的实时在线监测的方案, 实现了用完整严谨的数学模型得到唯一解的工程解决方案, 而且提出的方案可以在各种不同的已知条件下实现。由于本发明得到的数据具有实时性、代表性和真实性, 实现了大型电站化石燃料及换能设备性能监测和优化控制系统技术的重大的实质性突破。

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